

REMARKS

By this amendment, claims 15 and 33 have been amended. Claims 1-95 are pending in the application. The allowance of claims 9-11, 25-27, 43-46, 55, 61-64, 69, 74, 80, 85, 90 and 95 is gratefully acknowledged.

Claims 1-8, 12-24, 28-42, 47-54, 56-60, 65-68, 70-73, 75-79, 81-84, 86-89, and 91-94 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. This rejection is respectfully traversed. The Office Action contends that a re-quantization process is not supported by the originally filed specification. Support for the limitation can be found, however, in the specification at page 35, ln. 24 – page 41, ln. 7.

As described therein, whether or not quantization output of a quantization part 111 is a quantization level 1 is determined, and the quantization output is output as it is when the determination result is that the quantization output is other than the quantization level 1. When the quantization output of quantization part 111 is the quantization level 1, a threshold is determined. Whether or not a level of a target pixel after diffusion error has been added is smaller than the threshold is determined, and, the quantization output of the quantization part 111 is output as it is when the target pixel level is equal to or larger than the threshold. When the target pixel level is smaller than the threshold, it is determined that re-quantization is required, and re-quantization is carried out as a result of the target pixel level being compared with a threshold concerning the quantization level 1. Details of the re-quantization processes are described in the originally filed specification at page 37, ln. 12 – page 39, ln. 2. The claimed invention should not be limited, however, to the details of the preferred embodiments.

When such re-quantization is not carried out, as shown in FIG. 3, in a middle tone zone of input image data, a zone in which a ratio of unstable minimum dots having quantization level 1 increases exists, and in this zone, image stability and tone characteristics degrade. Also, in a high tone zone in the input image data, a zone in which a ratio of small dots of quantization level 2 increases exists, and in this zone, image stability and tone characteristics degrade. In contrast thereto, when re-quantization is carried out, as shown in FIG. 4, in a low tone zone of the input image data, a ratio of generation of quantization level 1 increases as a level of the input image data increases. In a middle tone zone of the input image data, a ratio of generation of the quantization level 1 sharply falls after a certain level is reached while a ratio of generation of the quantization level 2 increases. Accordingly, for a case where an image is produced with the use of a larger dot as for higher quantization level pixel, an image can be produced with minimum dots corresponding to the quantization level 1 for the low tone zone. Thereby, isolated dots are prevented from being conspicuous, and thus, grain characteristics of the image can be improved.

Although the first embodiment is described above, in the present invention, the error-added image data is again quantized when the image data has a specific quantization level after a first quantizing of error-added image data. In light of the above, Applicant respectfully requests that the rejection of these claims be withdrawn.

Claims 15-24, 28-42, and 47-54 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims have been amended to overcome the concerns raised in the Office Action. Applicant respectfully requests that the rejection of these claims be withdrawn.

Claims 15-16, 18, 20-24, 29, 33-34, 36, 38-42, 48, 50-54, 56-60, 75, and 91-94 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Marcu (US 6,160,921). This rejection is respectfully traversed.

Claims 15, 33, 56, and 58-60 recite, *inter alia*, an image processing method or apparatus “wherein re-quantization is performed.” Marcu does not teach or suggest this limitation. In contrast, according to Marcu, as shown in the flow chart of FIG. 5, only Step 64 ($M_{x,y} > 127$) quantizes image data to which error has been added. After that, although quantization value $Q_{x,y}$ is inverted by original data $P_{x,y}$ or such, there is no process of again quantizing the image data $Q_{x,y}$ to which error has been added to determine $Q_{x,y}$. Therefore, Marcu merely discloses that image data to which error has been added is quantized once.

According to the present invention, a quantization level in Step S1 of a flow chart of FIG. 2 may be obtained from one quantization of image data to which error has been added. Then, only when this is the quantization level 1, the image data to which error has been added is again quantized in Steps S4 and S6. Accordingly, quantization of image data to which error has been added is carried out twice. The second quantization is called a “re-quantization.”

Thus, claims 15, 33, 56, and 58-60 are not anticipated by Marcu. Claims 16, 18, 20-24, and 29 depend from claim 15 and are patentable at least for the reasons mentioned above. Claims 34, 36, and 38-42 depend from claim 33 and are patentable at least for the reasons mentioned above. Claims 34, 36, 38-42, 48, and 50-54 depend from claim 33 and are patentable at least for the reasons mentioned above. Claims 57 and 91 depend from claim 56 and are patentable at least for the reasons mentioned above. Claims 75 and 94 depend from claim 60 and are patentable at least for the reasons mentioned above. Claim 92 depends from claim 58 and is patentable at least for the

reasons mentioned above. Claim 93 depends from claim 59 and is patentable at least for the reasons mentioned above.

Claims 1-8, 12-14, 31-32, 76-79, 81-84, and 86-89 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Marcu. This rejection is respectfully traversed.

Claims 31-32 depend from claim 15 and are patentable at least for the reasons mentioned above. Claims 76-79 depend respectively from claims 56 and 58-60 and are patentable at least for the reasons mentioned above. Claims 81-84 depend respectively from claims 56 and 58-60 and are patentable at least for the reasons mentioned above. Claims 86-89 depend respectively from claims 56 and 58-60 and are patentable at least for the reasons mentioned above.

In order to establish a *prima facie* case of obviousness “the prior art reference (or references when combined) must teach or suggest all the claim limitations.” M.P.E.P. §2142. Marcu, even when considered in combination with the assertions in the Office Action, does not teach or suggest all limitations of independent claim 1, .

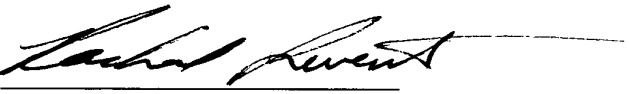
Claim 1 recites, *inter alia*, an image forming method “wherein re-quantization is performed.” Marcu does not teach or suggest this limitation. As discussed above regarding the patentability of claims 15, 33, 56, and 58-60 Marcu teaches only a single quantization. According to Marcu, as shown in the flow chart of FIG. 5, only Step 64 ($M_{x,y} > 127$) quantizes image data to which error has been added. After that, although quantization value $Q_{x,y}$ is inverted by original data $P_{x,y}$ or such, there is no process of again quantizing the image data $Q_{x,y}$ to which error has been added to determine $Q_{x,y}$. Therefore, Marcu merely discloses that image data to which error has been added is quantized once. Thus, the assertions in the Office Action do not remedy the deficiency of Marcu. Since Marcu does not teach or suggest all of the limitations of claim 1, claim

1 and dependent claims 2-8 and 12-14 are not obvious over Marcu. Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of claims 1-8, 12-14, 31-32, 76-79, 81-84, and 86-89 be withdrawn.

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

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Respectfully submitted,

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